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**HYDRO POWER AND ENERGY
PLANNING PROJECT (HPEP)**

ASSESSMENT OF GEMM 2015

September 2013

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(HPEP)

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USAID/CAUCASUS OFFICE OF ENERGY AND ENVIRONMENT

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1.0 LIST OF ACRONYMES

Acronym	Term
BSTL	Black Sea Transmission Line
CBA	Cost Benefit Analysis
COA	Chart of Accounts
DAP	Day Ahead Planning
EC	European Community
E&G Law	Electricity and Gas Law
EMRA	Energy Market Regulatory Authority of Turkey
ESCO	Electricity System Commercial Operator Ltd.
ETM	Electricity Trading Mechanism
EU	European Union
GEDF	Georgian Energy Development Fund
GEMM	Georgian Electricity Market Model
GNERC	Georgian National Energy and Water Supply Regulatory Commission
GSE	Georgian State Electro System
HP	Hydropower
HIPP	Hydropower and Investment Promotion Investment Project
HPEP	Hydro Power and Energy Planning Project
HPP	Hydropower Plant / Hydropower Project
IFC	International Finance Corporation
IT	Information Technology
KPI	Key Performance Indicator
MAP	Month Ahead Planning
MCH	Market Clearinghouse
MoE	Ministry of Energy
MO	Market Operator
MW	Megawatts
NARUC	National Association of Utility Regulatory Commissioners
OTC	Over the Counter
SEE	Southeast Europe
SOLR	Supplier of Last Resort
TF	Task Force
TO	Transmission Owner
ToR	Terms of Reference
TPP	Thermal Power Plant
TSO	Transmission System Operator
TWh	Terawatt Hours
TYNDP	Ten Year Network Development Plan
USAID	United States Agency for International Development
USoA	Uniform System of Accounting / Accounts
WB	World Bank
WG	Working Group

2.0 INTRODUCTION

USAID's Hydro Power and Energy Planning (HPEP) Project commenced on September 1, 2013. A major task for USAID HPEP is the further support to the electricity sector in implementing the Electricity Trading Mechanism (ETM) envisaged under the future market design for Georgia referred to as the Georgia Electricity Market Model for 2015 or "GEMM 2015".

USAID required that the HPEP team develop and submit to USAID an assessment of the progress of GEMM 2015 within 30 days of the project commencement. This report provides a summary of progress to date, the next steps to be completed under HPEP assistance, the development of institutional and capacity building at the four key entities (Ministry of Energy, Georgia State Energosystem, Electricity System Commercial Operator, and the Georgia National Energy and Water Supply Regulatory Commission), and lastly a review of the IT platform development for GEMM 2015.

3.0 SUMMARY OF ETM PROGRESS TO DATE AND NEXT STEPS

The detailed assessment on the activities and deliverables specified in GEMM 2015 is located in Attachment 1. USAID HIPP developed a large amount of deliverables and provided numerous capacity building and promotional events regarding GEMM 2015. USAID HPEP is anticipated to continue the effort to complete a large share of the remaining deliverables, but also to focus on capacity building that will enable the counterparts to understand the key documents developed by USAID HIPP and USAID HPEP and adopt the various laws, regulations, rules and procedures.

Recent events show that momentum is building on several fronts in implementation of the ETM, including:

- The Interconnection Operation Agreement for the new BSTP interconnection was signed by GSE and TETIAS (the BSTP is expected to be in operation by December 2013);
- GSE and TETIAS are negotiating a Dispatcher to Dispatcher Agreement, one of the key contracts recommended in GEMM 2015;
- The Deputy Minister of the MoE responsible for legal issues has developed a set of amendments to the Electricity and Natural Gas Law that initiate many actions to implement the ETM and to increase the powers of GNERC to oversee market development and monitoring;
- ESCO finished the initial draft of the Balancing and Settlement Rules which will be the basis for assigning liabilities for each hour to each market player;
- Both GSE and ESCO have agreed to move ahead with implementing Day Ahead Planning, a cornerstone action for implementing the balancing market. The MoE has agreed to make amendments to the Market Rules for implementing DAP;
- GNERC has initiated the Uniform System of Accounts with USAID HPEP leading a WG to implement the initial aspects of the USoA for the energy sector as GNERC will start setting tariffs based on the actual cost of service for the first time in nearly eight years.

- GNERC is prepared to modify the tariff methodology to create a state-of-the-art methodology for setting tariffs for transmission and distribution networks.
- GNERC started to work on Power Market Monitoring procedures and regulations with USAID HIPP leading the WG.
- Two chapters of the transmission code are completed and GSE's general manager promised to have the grid code completed by the end of 2013.
- MoE made modifications to the MoU process (Development Contract) that greatly improve the process, taking into considerations several recommendations from USAID HIPP (such as bidding that price for winter sales, greatly decreasing the amount of bank guarantee, and dividing development of HPPs into a two-phase process;

But many more areas are yet to be developed. The key areas yet to be developed by USAID HIPP include:

- Preparations for Day Ahead Planning including supporting electricity off-takers and generators on day ahead scheduling of the next day hourly nominations and eventually bi-lateral contract nominations. This will be the first step in introducing the hourly electricity market in Georgia.
- Further and continued developed of the Electricity and Natural Gas Law or the creation of the Electricity Market Law as a replacement of the E&G Law. Other related Laws and regulations will also need to be amended.
- Negotiations between GNERC and EMRA concerning the matching of long-term capacity allocation on the new transmission interconnection line and the long-term import certification for wholesale buyers in Turkey.
- Finalization of the Electricity Transmission Tariff Methodology for domestic and export services and the development of the relevant tariffs for 2014. In addition, tariffs for the TSO and MO along with ancillary services should be developed.
- Further development of the Uniform System of Accounts for generators, transmission operators, distribution operators and retail supply entities including Chart of Accounts, Instructions to the Chart of Accounts, Reporting Forms, Instructions to the Reporting Forms, Accounting Policy, and Accounting Guidelines. The work will also include conversion of 2011 and 2012 financials for the distribution companies to organize expenses and assets in USoA format for GENRC to analyze as part of the tariff calculation in 2014.
- Creating a set of clear market rules including:
 - Transmission capacity allocation
 - Transmission congestion management
 - Trading switching rules
 - Supply of last resort rules
 - Day Ahead Planning
 - Balancing market rules
 - Interaction of the MO, market players and the Market Clearinghouse
 - Settlement procedures

- Reserve capacity rules
- Nomination and scheduling
- Market entry and exit
- Trader registration and information/data exchange
- Finalization of the Transmission grid code and distribution grid code.
- Creation of License templates for the Transmission System Operator and the Market Operator.
- Further development of Power Market Monitoring procedures and defining of data and indices for monitoring of Georgian Power Market.
- Support as needed of the WB project implementer in the assessment and implementation of IT platforms for the MO and TSO. (See section III below.)
- Electricity Sector Contractual framework including TSO-TSO agreements, TSO-Transco agreements, TSO-MO agreements, and many other similar contracts that are yet to be developed.
- Continue to explore with Turkish Counterparts, especially EPIAS, the creation of a trading node at the Georgia-Turkey border that would allow for Georgian HPPs to trade on a Power Exchange allowing for daily/hourly correction of their trading positions, thereby greatly increasing the value of new Georgian HPPs.
- Further develop the Market Clearinghouse proposal for Georgia and develop proposed outline of clearing rules.

4.0 INSTITUTIONAL AND CAPACITY BUILDING

USAID HIPP supported 4 institutions/entities in identifying gaps and strengthening their capacities related to GEMM 2015. USAID HIPP also reviewed the structures of all four institutions. The summary of those studies are provided below.

4.1 Ministry of Energy

The Georgian Law on Electricity and Gas states that the primary function of the Ministry of Energy (MoE) is the development and implementation of the national energy policy and strategy. This function would include developing a vision and implementing a plan to reform the electricity power sector. The Ministry's policy and strategy should be the guiding documents as the Ministry recommends amendments to the primary energy legislation to the Parliament.

At this point, the MoE has no department and in fact, not one of the three deputy ministers has formal responsibility to develop the energy policy and strategy. The existing structure of the MoE is shown in Attachment 2.

In order to re-focus the MoE on policy and strategy development and implementation, USAID HPEP has recommended that the MoE separate the Analytical department of the MoE into two groups, one with the responsibility to develop the national energy balance and the other group to develop the energy policy and strategy, two-year implementation plans and to monitor the implementation.

In addition, USAID HPEP has recommended that the MoE select an individual at a somewhat high level to oversee the development of the energy planning process. Eventually the person responsible for the planning process should be at a decision making level, in this case, a deputy minister. Given that this activity is the primary focus of the Ministry, one of the deputy ministers should hold this activity as their primary responsibility.

4.2 Georgian National Energy Regulatory Commission

Georgian National Energy and Water Supply Regulatory Commission (hereinafter GNERC) is established in 1997 and consist of 5 members and 93 staff members

GNERC's organizational structure is shown in Attachment 2. The main activities of GNERC are to ensure reporting compliance by the licensed entities, provide licenses to new HPPs, and to conduct dispute resolution between retail energy customers and energy distribution companies. Since 2006, GNERC role in tariff development, license monitoring and market monitoring has been non-existent.

Many changes are afoot at GNERC. A new Chairperson has been appointed under the Decree of the Prime Minister 172 from September 17, 2013 and another Commissioner is about to be named. The MoE is proposing major increase in the responsibilities of the GNERC in the proposed amendments to the Electricity and Natural Gas (E&G) Law.

USAID HIPP created a revised organizational chart to cover some of the new responsibilities and reviewed it in 2012 with GNERC. The reaction from GNERC was that new resources would need to be added with high level of capabilities but still with significant capacity strengthening by USAID. But that organizational chart did not envision that GNERC would take on much more responsibility as suggested in the E&G Law amendments. Given these amendments are adopted, GNERC will need to make a significant change in its organizational structure, human resources and IT platforms. In addition, the expected level of capability building by USAID HPEP must be greater than what was planned previously.

4.3 George State Electrosystem

USAID HIPP completed an extensive review and analysis of GSE's organizational structure and the structure of Transmission System Operators in Europe. The results of that activity can be found in the USAID HIPP report, "**Development of Transmission System Operator in Georgia**", dated August, 2013. A major recommendation of that report was that GSE should unbundle over time into separate transmission and dispatch functions, starting with accounting unbundling and ending in completely independent entities operating in the electricity sector.

In addition, the USAID HICD Plus Project is working closely with GSE in developing corporate planning and improvements in internal human resources and business processes. This assistance provides GSE with technical assistance in management processes but not in development of TSO as a separate organization serving the electricity sector market players under GEMM 2015.

USAID HPEP must support GSE in development of long-term planning process including the development of a Ten Year Network Development Plan (TYNDP), a requirement of ENTSO-E. USAID HPEP will work with USAID Georgia Mission along

with USEA relating to the activities under the BSTP and USAID AGT Bridge that will form the basis for the information within the TYNDP.

4.4 Electricity System Commercial Operator

With the change in management at ESCO, new relations will need to be developed between the new management and the HPEP team. USAID HIPP completed an extensive review and analysis of ESCO's organizational structure and the structure of Market Operators organizations in the Europe Union. The results of that activity can be found in the USAID HIPP report, **"Evolution Development of the Electricity Market Operator in Georgia"**, dated February, 2013.

The proposal under GEMM 2015 by USAID HIPP was to slowly convert ESCO from a wholesale buyer to an Electricity Market Operator. The organizational design today and the proposed organizational design as a Market Operator are shown in Attachment 2.

The MoE has proposed that the title of ESCO be changed to Market Operator, without changing any of its functions. The MoE has proposed that ESCO develop the regulations and IT platforms for a Market Operator over the next two years (by 2015). This is not acceptable as many things such as day ahead planning, need to be implemented immediately and not wait for 2015. Additional discussions with the Ministry are necessary to explain why the market operator should be operational immediately and not in 2015.

5.0 IT DEVELOPMENT

USAID HIPP provided a general description of the IT platforms required to implement GEMM 2015 reforms in the electricity sector. That outline was created in October 2011 and provided to USAID, counterparts and the IFIs. That preliminary analysis started the discussions in the donor community on providing technical assistance on a detailed assessment of the IT platforms needed for supporting GEMM 2015 at the MoE, GSE, ESCO and GNERC.

The identified areas needing IT support include, but not limited to:

- Day ahead planning
- Balancing market
- Capacity allocation and congestion management auctions
- Day ahead market
- Intra-day market
- Market surveillance and monitoring
- Clearing mechanism
- Transmission performance reporting
- TSO continuously updated and interactive website

The World Bank in July 2013 hired a consultant to write Terms of Reference for Assessment and Implementation of certain IT solutions for the TSO and MO. The WB expects the ToR to be finalized in the near future. Once the WB's ToR is published and areas are identified that the WB will not be supporting, a plan to support the other areas should be developed and promoted.

Attachments

DRAFT

Attachment 1. List of GEMM 2015 detailed ETM documents (proposed, completed under HPEP, still remaining)

GEMM 2015

Green	Adopted
Orange	Completed by HIPP
Yellow	Partially completed
White	Nothing completely to date

Task 1 Design and planning of the ETM	Status	
Report on GEMM 2015 and ETM		
• Vision	C	
• Road Map ("The Plan")	C	
• Action Plans for Each Implementation Party	C	Needs to be updated
Summary of Laws and Codes for Georgia Related to ETM	C	
Power Market Development in Georgia	C	Needs to be updated
The Impact of the Electricity Trading Mechanism on the Electricity Power System in Georgia (CBA)	C	
Task 2 Capacity Building	Status	
Competitive Market and Cross Border Trading	P	Needs to be repeated at decision making level
Electricity Trading Risk Assessment for Georgian HPPS and Recommendations for Mitigation	C	
GSE Transmission Costs (Special Study)	C	
HIPP Presentation-Regional Electricity Trading	C	
HIPP Responses to GSE and ESCO	C	
Performance Based Tariffs for Electricity Network Operators –provided to GENRC	P	GENRC has asked for repeat of the training
Presentation for Energy Stakeholders - Role of Regulator in Competitive Electricity Markets	C	
Presentation for GENRC - International Experience in Implementation of USOA	P	This needs to be repeated for the new Commissioners
Presentation for GENRC - Grid Code Requirements and Responsibilities of the Regulators	P	This needs to be repeated for the new Commissioners
Presentation for GENRC - International Best Practice in Electricity Market Monitoring	P	This needs to be repeated for the new Commissioners
Presentation for GENRC- Introduction to ancillary services in power markets	P	This needs to be repeated for the new Commissioners
Presentation on GEMM 2015	C	
Presentation on GEMM and ETM for Donors and IFIs	C	
Presentation on ETM and Hourly Balancing for Electricity Market Private Entities		
Presentation to GENRC - Implementation of USOA in Bulgaria	C	
Presentation to MENR on GEMM and ETM	C	
Presentation: Benefits of SHPP Consolidator	C	
Presentation: Concept of the Day-Ahead Planning on the Georgian Electricity Market	P	This presentation will be done along with the presentation on Key Elements of All Competitive Electricity markets now under development
Presentation: ESCO's Role and Involvement in ETM and GEMM	C	
Presentation: GEMM 2015 and Electricity Trading Mechanism	C	
Presentation: GSE's Role and Involvement in ETM and GEMM	C	
Presentation: Internal Market for Electricity in the EU and the ETM	C	

Presentation: Principles of Transmission Tariff Methodology	P	Needs to be repeated
Presentation: Risks Inherent in Regional Electricity Trading	C	
Presentation: Role of Regulator in Competitive Electricity Markets	C	
Presentation: Transmission Tariff Methodology Outline	C	
Report and Presentation to GENRC: Performance Based Tariffs for Electricity Network Operations	C	
Revenue Capped Performance-based Electricity Network Tariffs for GNERC	C	Needs to be repeated
Rules and Instructions from USOA to determine Regulatory Asset Base for GNERC	C	
Day-ahead Markets of Romania, Hungary, Slovenia	C	
GSE's Role and Involvement in ETM and GEMM	C	
Enabling Environment Workshop for GNERC	C	
ESCO's Role and Involvement in ETM and GEMM	C	
EU Directives and Cross Border Trading	C	
Net metering and its applicability to Georgia	C	
Reactive Power and Importance for the Power System	C	Needs to be repeated with a combined audience from GNERC and GSE
PMUM Evolution	C	
Transmission Tariff Methodology, Ancillary Services, TSO and MO Licenses	C	
Proposed Amendments to Energy and Gas Law	C	
Power Market Models and Structures	C	
Renewable energy supporting schemes	N	
Differential Tariffs Regulation	N	
Various phases on implementing day ahead planning	N	
Day ahead scheduling – load forecasting by end-users	N	This will be a series of trainings to GSE, ESCO and market buyers
Day ahead scheduling – hourly production forecast by generators	N	This will be a series of trainings to GSE, ESCO and generating plants operators
Electricity Supply Agreement	C	
Initial draft of COA for USOA - Long Term Fixed Assets and Expenses Accounts	C	
Regional market operation	C	
Cooperation of the regulators in cross-border issues	C	
Methodology for calculating non-metered energy	N	
Balancing of Renewable Energy	N	
Auctioning procedures and regulations	N	
Implementation of Automatic Meter Reading	N	
Risk management in regulated entities	N	
Licensing the TSO and MO	N	
Task 3 Institutional Development	Status	
Organizational Design of the New Market Operator in the Electricity Sector in Georgia	P	
Development of Organizational Design for the Transmission System Operator in Georgia	P	
Develop an asset management program for GSE	P	
GSE load forecasting methodology	P	Conceptual Paper developed
Develop concept for TSO's website	P	Partially covered by IT report
Develop a proposal for reorg. GNEWRC, Support GNEWC reorg. & strengthening	P	An org. chart was developed for the future
General outline of the Clearing House Mechanism for the Georgian Power Market	N	Conceptual paper and international best practices training provided.

Task 4 Regional Market Analysis and legislative basis for electricity trading	Status	
Turkish power market analysis/legislative framework and recommendations for compliance and/or modifications (such as PX node for Georgian border)	C	
Turkey - Market Assessment HPP Promotion	C	
Turkish Electricity Market Overview	C	
Turkish Electricity Price Curve Analysis, March 2012	C	
Turkish Power Market Monthly Reports (Aug. 2011 - Aug. 2012)	P	Updates on the prices for Turkey and SEE are updated on a regular basis
Turkish Power Market Quarterly Report (Sept. 2012 - Nov. 2012)		
Georgian and Turkish Grid Capability to Accommodate Georgian Export and Azerbaijan Wheel to Load Centers	P	
Update of Legal Review of Turkish Electricity Sector	P	
Scheduling and Imbalance Settlements Recommendations for Power Exports to Turkey	P	
Ability of a Georgian Entity to Act on Turkish Market	P	
Review and analyze trading to SEE	N	
Day-ahead Power Market Report Selected EU Countries, 2011		
Day-ahead EU Power Countries Report, March 2012		
EU Power Market Report, Apr. 2012	C	
EU Power Market Reports, Feb. 2012	C	
EU Power Market Reports, Jan. 2012	C	
EU Power Market Reports, March 2012	C	
Review and analyze Azerbaijan transit trade into Turkey and its incorporation into the ETM	N	
Review and analyze impacts on Russia and Armenia import/export trade as part of the ETM	N	
Regional Electricity Trading Conference Brochure	P	Will be updated in 2014
Regional Market Modeling/Analysis	P	Partially done, analytical part was accomplished
Historical and forecast market prices	N	
Pricing structures/risk mitigation for energy sales agreement	P	
Electricity Trading Risk Assessment for Georgian HPPs and Recommendation for Mitigation	C	
EU Energy Directives and Georgia		
Update on the Regional Transmission Transfer Capability for Georgian new HPPs Electricity Sales	N	
Task 5 Primary Legislative Improvements	Status	
Legislative research of enabling environment for transit	N	
Enabling Legislation Report	C	
Research & Analysis of Energy Policy documents	C	
Analysis of Electricity Market Design and update GEMM 2015 as necessary	P	Update of GEMM 2015 is needed to include MAP/DAP and update timelines
New Electricity Market Law	N	
Proposed Amendments to the Law on Electricity and Natural Gas of Georgia	P	
Modification of regulations on Customs	N	
Recommended Changes to Georgia Legal Framework	P	
Creating legislative framework for certifying energy traders	N	
Legal and Regulatory Review of Turkish Electricity Sector	P	

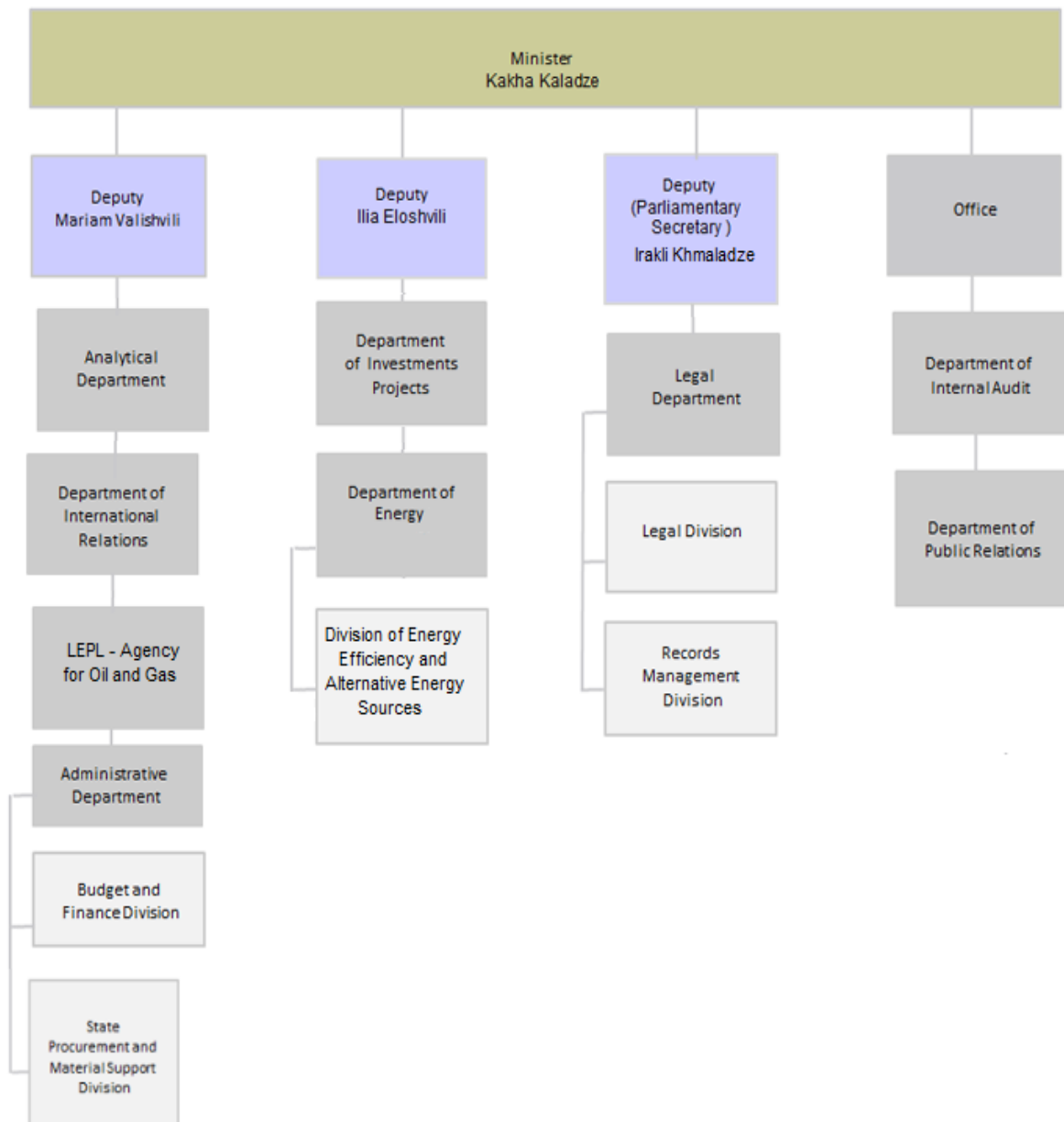
Task 6 Development of the electricity market regulations	Status	
Development of new Market Rules	N	
Report on Market Rules (Sept. 2011)	C	
A view of Georgian Market Rules, Sept. 2010	C	
Transmission Grid Code	P	
Comparison Analysis of Bulgarian and Turkish Grid Code Sections	C	
Distribution Grid Code	P	
Balancing and Settlement Rules	P	
Market Clearing Rules	N	The amendments to the E&G Law do not specify the development and implementation of Clearing Rules
Over the counter (OTC) trading	N	
Reserve Capacity Rules	N	
Customer Switching Rules	P	Outline developed
Supplier of Last Resort (SOLR) Rules	P	Outline developed
Connection to the distribution network	N	
Interconnection capacity allocation rules	P	
Transmission congestion management rules	P	
Electricity Market Surveillance and Market Mitigation Procedures	N	
Glossary on Electricity Market Terms and Definitions	P	
Performance Indicators for Electricity Network Indicators Report	C	
Task 7 Licensing and tariff development for the electricity market	Status	
Analyze the framework for licensing and support the development of license regulations	P	
Develop draft standard terms for Electricity Supply Agreements from a Georgian entity to a Turkish electricity off-taker	C	
Draft Market Operator License	P	
Draft Transmission System Operator License	P	
Transmission Tariff methodology	P	
Transmission system analysis (Deep and Shallow Costs, transfer capability etc.)	N	
Tariff development for market service providers (incl. use of networks)	N	
Tariff development for ancillary services	N	
Uniform System of Accounts (USoA)	P	Initial work has been completed, at least 2 more years of TA required
Proposed Performance Indicators for Electricity Network Operators for Tariff Adjustment	P	
Task 8 Developing Guarantee of Origins (GO)	Status	
Guarantee of Origin Regulations	N	
Purchase Obligation Procedures	N	
Opportunities for the Georgian Hydropower Industry to Benefit from Directive 2009/28/EC of the European Parliament	N	
Task 9 Contractual Framework	Status	
Consolidator template Contracts	C	
Template contracts for transmission services	N	
Template contracts for TSO services	N	

TSO- TSO contracts	N	
TSO-DSO Contract	N	
MO- MO contract	N	
MO-TSO Contract	N	
Membership contract with Market Operator	N	
Membership contract with the Clearinghouse	N	
Standard Energy Sales Agreement (Draft Electricity Supply Agreement)	P	
Template for Balancing Responsible Party	N	
Contractual Framework of Electricity Trading between Georgia and Turkey	P	
Notes on Standard MOU and PPA	+	
CBETA	A	
Report on Interconnection Operation Agreement	A	
Report on Paravani Energy Sales Agreement with ESCO (PDF)	C	
Review of Clean Energy's Adjaristqali Implementation Agreement (Oct. 2010)	C	
Review of TDA EFET Agreement by GWP	C	
Revised Report on GSE Transmission & Dispatch Agreement (Sept.2011)	C	
Task 10 Harmonization of legislation/regulations and negotiations with Turkish power sector entities and GoT officials		
Draft Renewable Energy Sources Law (Nov,2012)	P	
Turkey Import and Export Rules and Expectations	+	
Task 11 Infrastructure Improvements		
IT Platform Requirements for the New Electricity Market Operator	N	
Research and design of infrastructure changes	P	Partially covered by IT report
Research and Recommendations on Balancing Software	N	

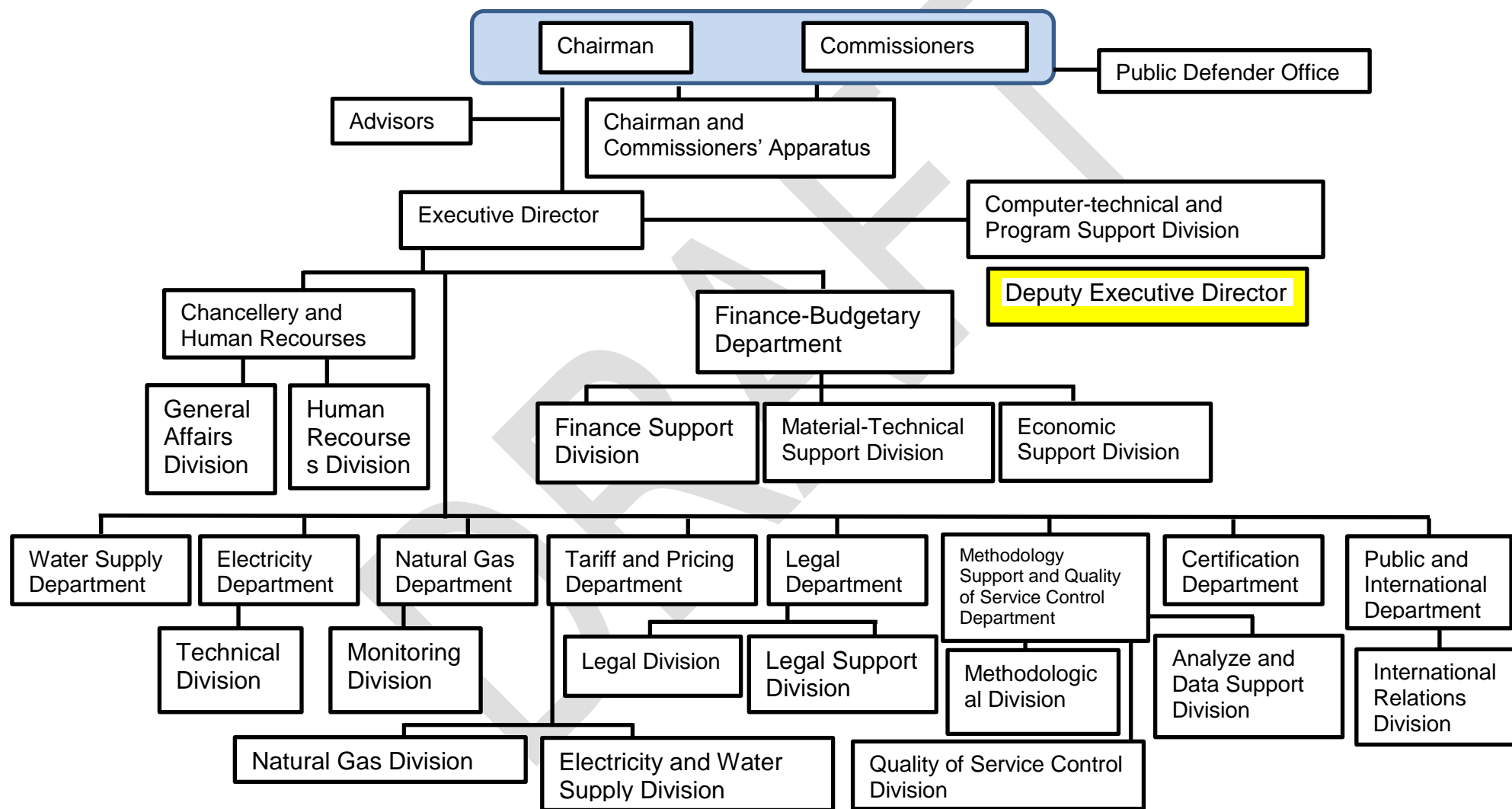
Attachment 2. Entities' Organizational Charts

Ministry of Energy

Existing Organizational Chart

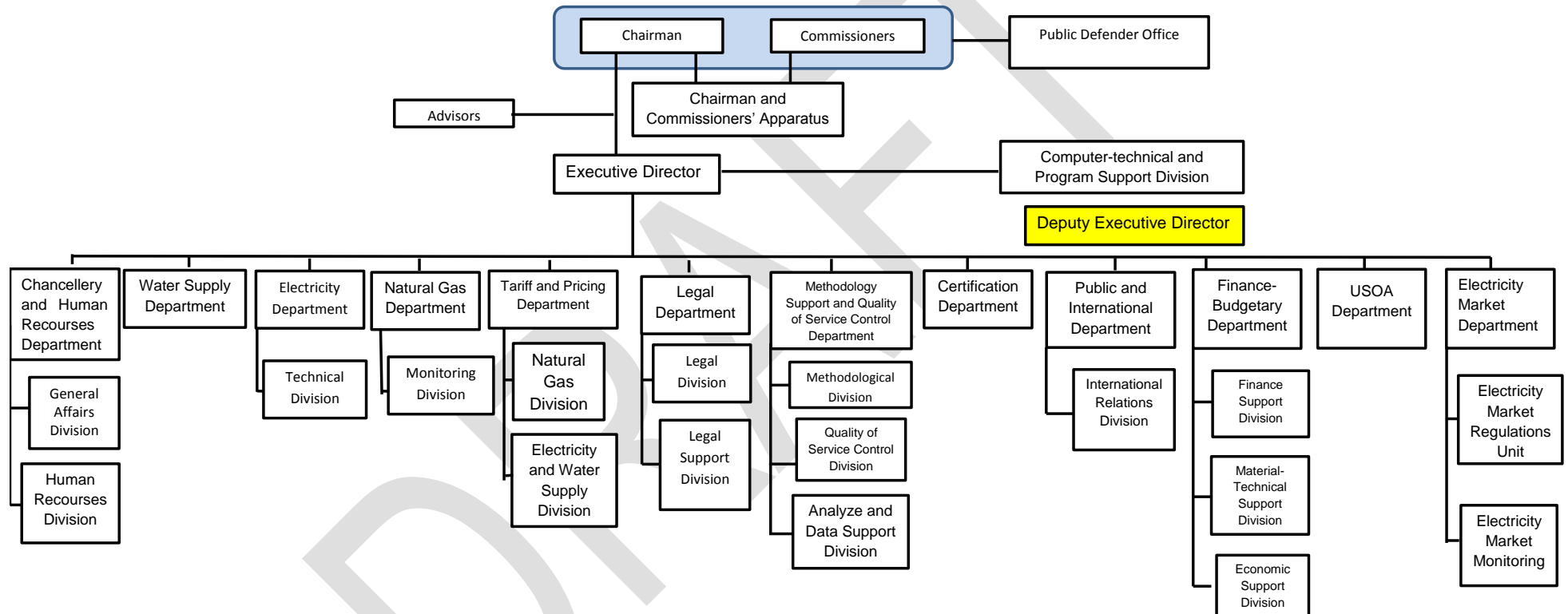


Georgian Energy and Water Supply Regulatory Commission
Existing Organizational Chart



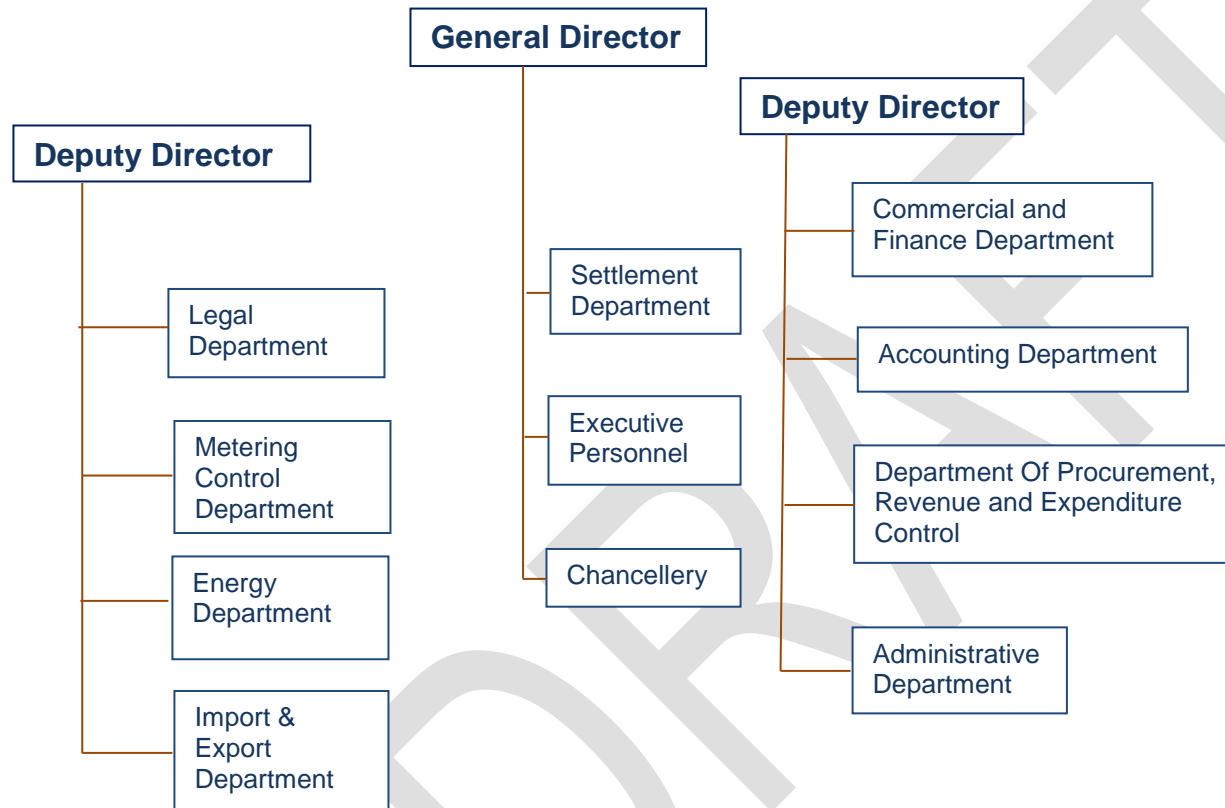
Georgian Energy and Water Supply Regulatory Commission

Proposed Organizational Design



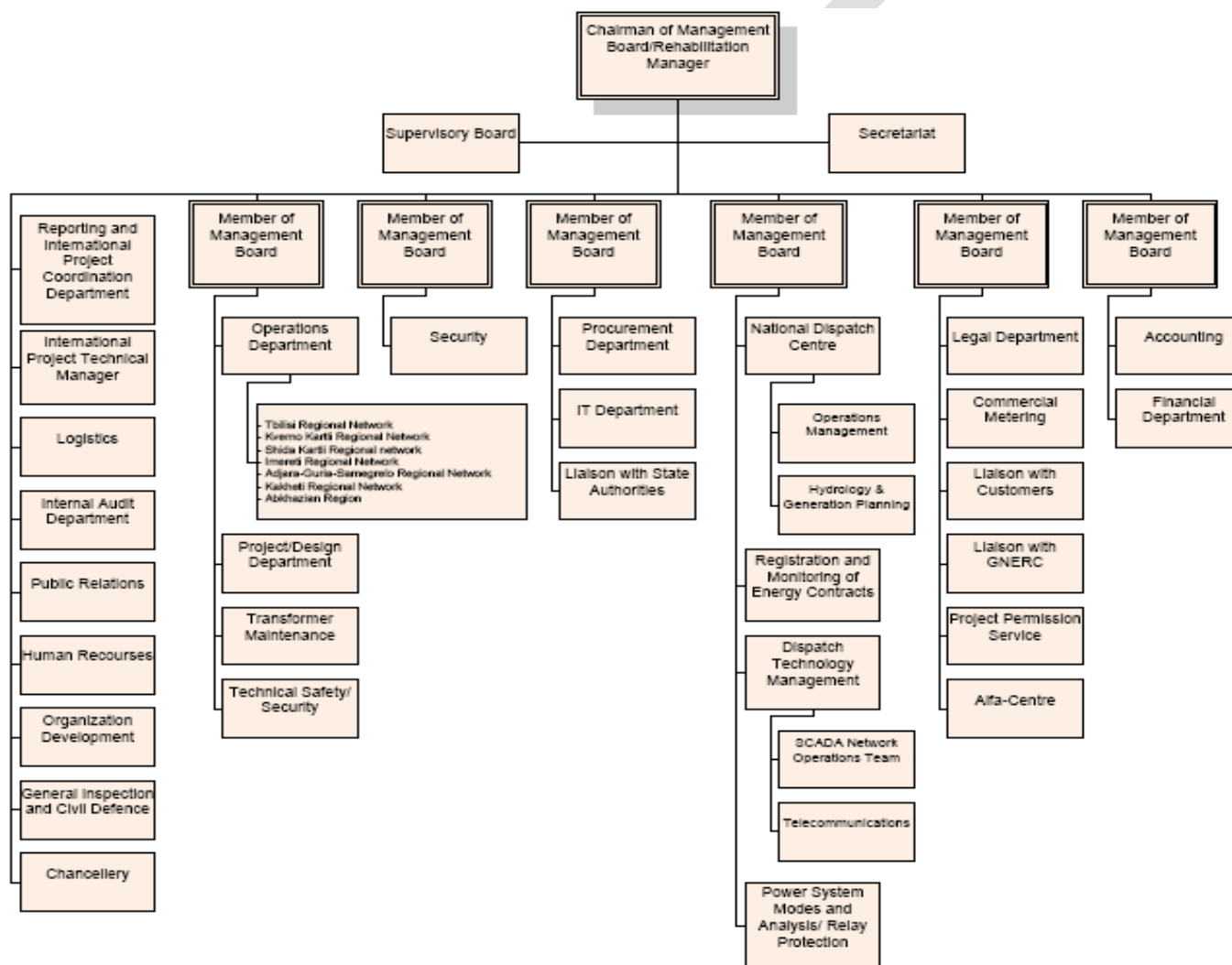
Electricity Sector Commercial Operator

Existing Organizational Structure

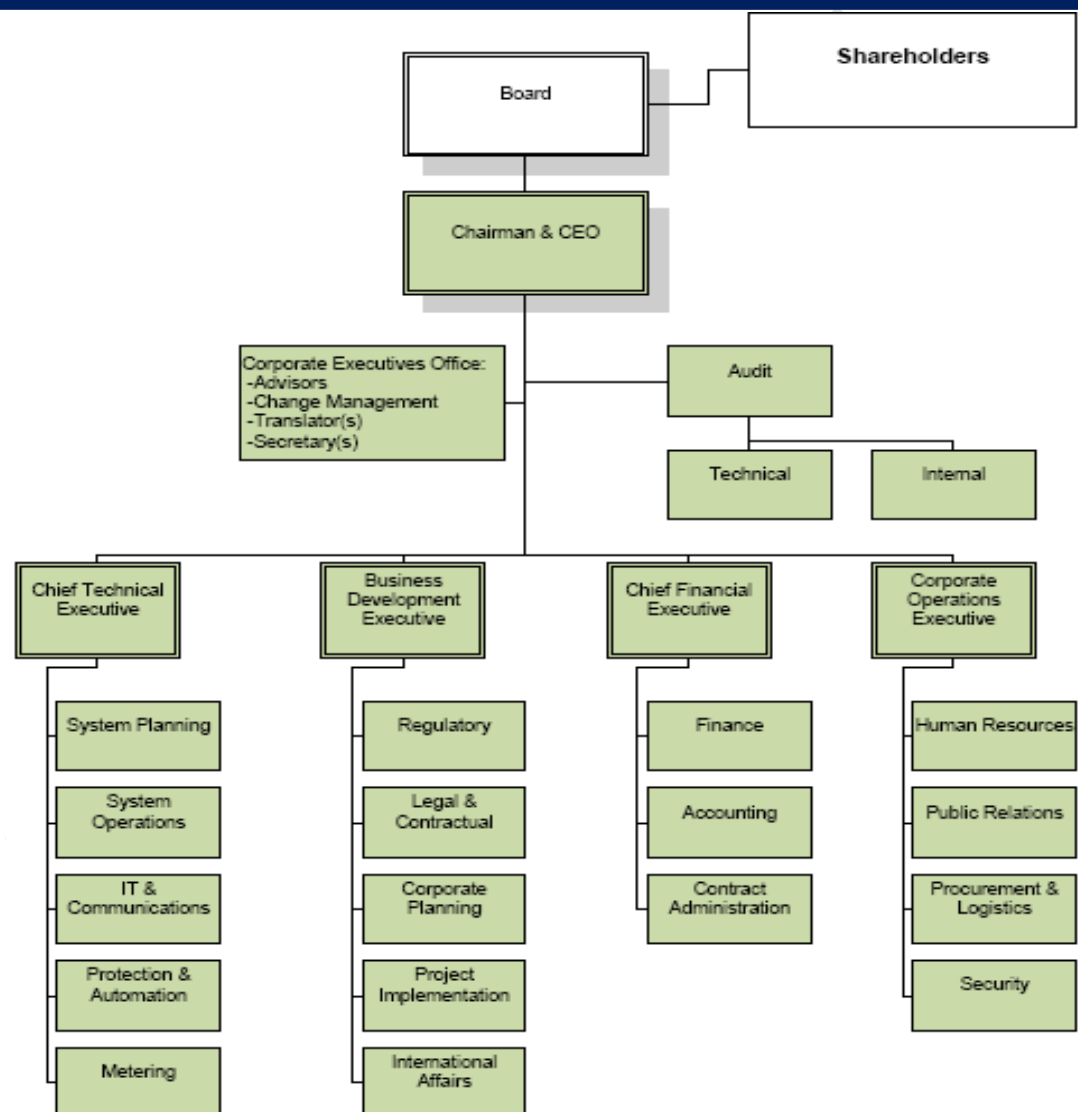


Market Operator Future Organizational Chart

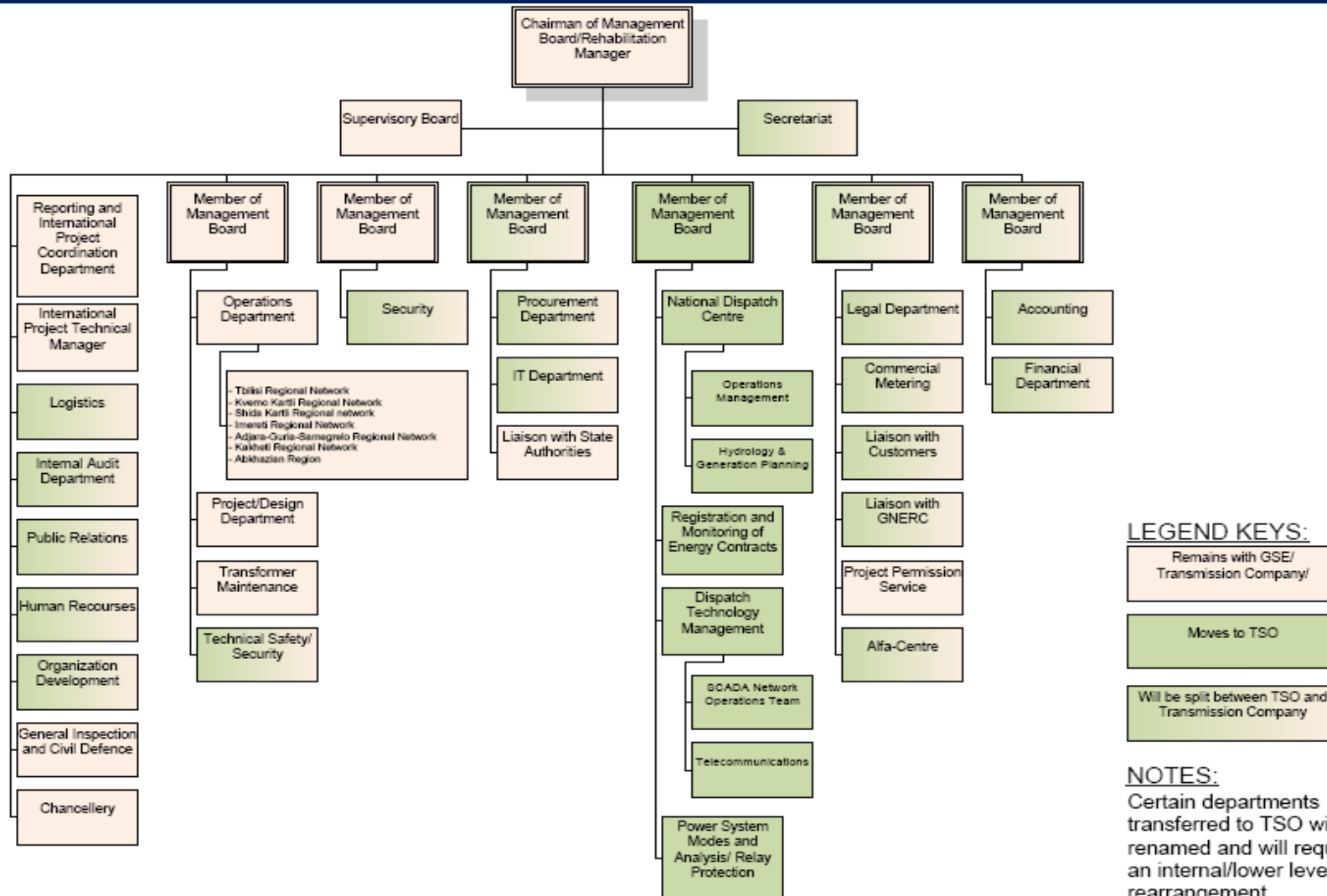
Current Organizational Structure of GSE/TSO



Final Organizational Structure of Georgian TSO



Transitional Phase for Organizational Structure of Georgian GSE/TSO



USAID Hydro Power and Energy Planning Project (USAID-HPEP)

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